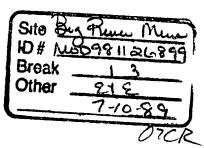
HUDWALKER & ASSOCIATES, INC

Consulting Engineers

505 Potosi Št PO Box 676 Farmington Missouri 63640 (314) 756 6775

July 10, 1989



Mrs Janese Neher Department of Natural Resources Waste Management Program P O Box 176 Jefferson City, MO 65102

Re St Francois County Landfill

Dear Mrs Neher

Enclosed are the results of the annual sampling and testing of the groundwater monitoring wells at the St Francois County landfill Of the six wells, only four had groundwater available to sample

All sampling and testing was performed by Larron Laboratories of Cape Girardeau, Missouri Should you have questions regarding these results, please feel free to contact the laboratory directly Samples were collected May 11, 1989

Sincerely,

Marvın E Hudwalker

mh

Enclosures

cc Mr Gayle Blackwell

Mr Bob Oberfelt

Mr C G Mattsson

Mr John Carter

Mr Rick Roberts, DNR

40108318

SUPERFUND RECORDS

DATE RECD BY LAB: 5-11-89 FACILITY: ST FRANCOIS COUNTY SANITARY LANDPIERSE PROMORD TO: DEPARTMENT OF NATURAL RESOURCES WABTE MANAGEMENT-ENFORCEMENT SECTION SAMPLES RECD PROPERLY PRESERVED: (N (CIRCLE ONE) PERMIT NO: 118701 POINT NO: 101 LAB NAME Larren Laboratory
LAB ADDRESS 529 Broadway
Cape Girardeau MO 83701
LAB TELEPHONE 314 334-8710 JEFFERSON CITY MO 65102 NOTES QL MEANS THE REASONABLY ACCEPTABLE QUANTITATIVE LIMIT FOR EACH PARAMETER IN THE SPECIFIED UNITS FOR LOWER VALUES PLACE A LESS THAN BIBN (<) IN FRONT OF VALUES FILTER AT TIME SAMPLES ARE COLLECTED FOR ALL HEAVY METALS. MERCURY AND TOS LAR SUPERVISOR S SIGNATURE UNITS - MG/L UNITS - UG/L 0.03 NH3 (AMMONIA AS N) QL=1 AG (SILVER) QL=10 NO32 (NITRATE/NITRITE AS N) QL=0 1 AS (ARSENIC) QL=10 3 21 P (TOTAL P) PL=0 05 B (BORON) QL=100 COD (CHENICAL DXYGEN DEMAND) 01.25 BA (BARTUM) SL=200 220 CL (CHLORIDE) QL=1 CD (CADMIUM) QL=5 120 TDS (TOTAL DISSOLVED SOLIDS) QL=1 CD (COBALT) QL=50 L20 FL (FLUORIDE) QL=1 CR (CHROMIUM) QL=10 420 SO4 (SULFATE) QL=1 CU (COPPER) QL=25 420 CA (CALCIUM) GL=5 FE (IRON) QL=100 202 MG (MAGNESIUM) QL=5 HG (MERCURY) QL=0 2 260 NA (SODIUM) QL=5 MN (MANGANESE) QL=15 5906 HARD (HARDNESS) CALCULATED PB (LEAD) QL=5 TOC (TOTAL ORGANIC CARBON) QL=1 SE (SELENIUM) QL=5 ZN (ZINC) DL=20 TOX (TOTAL DREANIC HALDGEN) GL=5 COND (CONDUCTIVITY) AT 25 C LMHO/CM FLEVATION OF REFERENCE POINT WATER LEVEL (DEPTH FROM REFERENCE POINT TO WATER) FT PH (UNITS) TOTAL DEPTH OF WELL (DISTANCE FROM REFERENCE POINT TO BOTTOM OF WELL) FT 12 WELL RECHARGES WITHIN 24 HRS YES NO RECHARGES TOO SLOWLY TO SAMPLE: YES NO WELL VOLUMES REMOVED 2 PURGING PARAMETERS STABILIZED: (ES) NO SAMPLE COLLECTED BY BAILER PUMP OTHER (CIRCLE ONE) DATE COLLECTED: 5-11-89 TYPE OF SAMPLE (WELL WITHOUT PUMP) WELL WITH PUMP SURFACE SAMPLE (CIRCLE ONE) COLLECTED BY: LANDFILL AR (CIRCLE ONE) COLLECTOR S COMMENTS

METALS FIELD FILTERED (ES) NO

CHAIN OF CUSTODY WITH EACH SAMPLE (ES NO

ANNUAL WASTE MANAGEMENT-WATER MONITORING REPORT						
FACILITY: ST FRANCOIS COUNTY SANIT PERMIT NO: 118701 POINT NO 102	ARY LANDPILEOSE FORWARD TO: DEPARTMENT OF WASTE MANAGEME P 0 BOX 176 JEFFERSON CITY	NT-ENFORCEMENT SECTION	BAMPLES ANALYZED W/IN HOLDING TIME: @ N (CIRCLE ONE)			
UNITS FOR LOWER VALUES PLACE	TABLE QUANTITATIVE LIMIT FOR EACH PARAMET E A LESS THAN SIGN (<) IN FRONT OF VALUES LECTED FOR ALL HEAVY METALS MERCURY AND	1	LAB ADDRESS 29 Broadway Cape Gl Broadw 170 83781 LAB TELEPHONE 3/4 334 89/0 LAB SUPERVISOR S SIGNATURE			
UNITS - MG/L		UNITS	S - UG/L			
NH3 (AMMONIA AS N) CL=1		AG (SILVER) QL=10				
NO32 (NITRATE/NITRITE AS N) QL=0 1		' AS (ARSENIC) QL=10				
P (TOTAL P) QL=0 05		B (BORON) QL=100				
COD (CHEMICAL DXYBEN DEMAND) QL=5		BA (BARIUM) QL=200	**********			
CL (CHLORIDE) QL=1		CD (CADMIUM) QL=5	*************			
TDS (TOTAL DISSOLVED SOLIDS) QL=1		CO (COBALT) QL=50				
FL (FLUORIDE) QL=1		CR (CHROMIUM) QL=10				
SO4 (SULFATE) QL=1		CU (COPPER) QL=25				
CA (CALCIUM) QL=5	7-5-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-	FE (IRON) QL=100	***			
MG (MAGNESIUM) QL=5		HG (MERCURY) QL=0 2				
NA (SODIUM) QL=5		MN (MANGANESE) QL=15	5			
HARD (HARDNESS) CALCULATED		PB (LEAD) QL=5	**********			
TOC (TOTAL ORGANIC CARBON) QL=1		SE (SELENIUM) QL=5				
		ZN (ZINC) QL=20				
		TOX (TOTAL ORGANIC H	HALOGEN) QL=5			
COND (CONDUCTIVITY) AT 25 C UNHO/CM	1	ELEVATION OF REFEREN	NCE POINT			
PH (UNITS)		WATER LEVEL (DEPTH F	FROM REFERENCE POINT TO WATER) FT			
WELL RECHARGES WITHIN 24 HRS: YES NO RECHARGES TOO SLOWLY TO SAMPLE: YES NELL VOLUMES REMOVED PURGING PARAMETERS STABILIZED: YES NO	ОМ	TOTAL DEPTH OF WELL	(DISTANCE FROM REFERENCE POINT TO BOTTOM OF WELL) FT			
	OTHER (CIRCLE ONE) WELL WITH PUMP SURFACE SAMPLE (CIRCLE	COLLE COLLE METAL	COLLECTED: 5 11-81 ECTED BY: LANDFILL LAB (CIRCLE ONE) ECTOR S NAME VOLUMENT OF NO.			
		CHAIN	N OF CUSTODY WITH EACH SAMPLE: YES NO			

ANNUAL WASTE MANAGEMENT-WATER MONITORING REPORT

FACILITY: ST FRANCOIS COUNTY SANITARY LANDPILEASE FOR PERM T NO. 119701 POINT NO: 104 NOTES - QL MEANS THE REASONABLY ACCEPTABLE QUANTITATIVE UNITS FOR LOWER VALUES PLACE A LESS THAN SIGN FILTER AT TIME SAMPLES ARE COLLECTED FOR ALL HEAD	MARTE MANAGEMENT-ENFORCEMENT SECTION 9 P 0 BOX 176 \$ JEFFERSON CITY MO 65102 LIMIT FOR EACH PARAMETER IN THE SPECIFIED L(<) IN FRONT OF VALUES	DATE RECD BY LAB: 5 1/-89 SAMPLES RECD PROPERLY PRESERVED: (Y N (CIRCLE ONE) BAMPLES ANALYZED W/IN HOLDING TIME (Y) N (CIRCLE ONE) LAB NAME Larron Labora dry LAB ADDRESS 529 Brosdyriy Cape Girardedu, MO 63761 LAB TELEPHONE 374 334-3770 LAB SUPERVISOR S SIGNATURE
UNITS - MG/L	UNITS -	UG/L
NH3 (AMMONIA AS N) QL=1	AG (SILVER) QL≃10	
ND32 (NITRATE/NITRITE AS N) QL=0 1	AS (ARSENIC) CL=10	
P (TOTAL P) QL=0 05	B (BORON) GL≈100	
COD (CHEMICAL DXYGEN DEMAND) QL=5 20,3	BA (BARIUM) DL=200	
CL (CHLORIDE) QL=1 /0 8	CD (CADMIUM) QL=5	
TDS (TOTAL DISSOLVED SOLIDS) QL=1 92.5	CO (COBALT) QL=50	120
FL (FLUORIDE) QL≈1 1791	CR (CHROMIUM) QL=10	40
S04 (SULFATE) QL=1	CU (COPPER) QL=25	<u> </u>
CA (CALCIUM) QL=5	FE (IRON) QL=100	<u>3</u>
MG (MAGNESIUM) QL=5	HG (MERCURY) QL=0 2	~~~~~~
NA (SODIUM) QL=5	MN (MANGANESE) QL=15	<u>500</u>
HARD (HARDNESS) CALCULATED 9999	PB (LEAD) QL=5	
TOC (TOTAL ORGANIC CARBON) QL=1	SE (SELENIUM) QL=5	***************************************
	ZN (ZINC) QL=20	70,000
	TOX (TOTAL ORGANIC HALO	06EN) QL= 5
COND (CONDUCTIVITY) AT 25 C UNHO/CM 193	ELEVATION OF REFERENCE	POINT
PH (UNITS)	HATER LEVEL (DEPTH FROM	M REFERENCE POINT TO WATER) FT
WELL RECHARGES WITHIN 24 HRS: YES NO RECHARGES TOO SLOWLY TO SAMPLE: (ES) NO WELL VOLUMES REMOVED PURBING PARAMETERS STABILIZED (ES) NO SAMPLE COLLECTED BY BAILER PUMP OTHER (CIRCLE ON TYPE OF SAMPLE GELL WITHOUT PUMP WELL WITH PUMP S COLLECTOR S COMMENTS INSUFFICIENT VOLUME IN WELL REQUIVEMENTS DUR ON-SIT	URFACE SAMPLE (CIRCLE ONE) Lorunal Collecte Collecte Collecte Collecte Collecte Collecte Collecte Collecte Collecte	LLECTED: 5-11-89 ED BY: LANDFILL LOB ICIRCLE ONE) OR S NAME FIELD FILTERED LES NO F CUSTODY WITH EACH SAMPLE (YES) NO

ANNUAL WASTE MANAGEMENT-WATER MONITORING REPORT

POINT NO 11 POINT NO 1 NOTES - QL MEA	T FRANCOIS COUNTY (1970) LOS ANS THE REASONABLY (FOR LOWER VALUES AT TIME SAMPLES ARE	CCEPTABLE QUANTI PLACE A LESS THA	TATIVE LIMIT (WARTE MANAGEMENT P O BOX 176 JEFFERSON CITY FOR EACH PARAMETER FRONT OF VALUES	-FNFORCEMENT SI NO 65102 IN THE SPECIF	SECTION SA LA LA (IED LA	AMPLES PECD AMPLES ANALY AB NAME	LABI 5-//-89 PROPERLY PRESERVED YZED W/IN HOLDING T LATTON LABORATORY 529 Broadway Capa Girardeau, MO 6 E 3/4 334 89/0 OR S SIGNATURE	IME Q N (CIRCL	
	UNITS - MG/L					UNITS - U	JG/L		•	
NH3 (AMMONIA A	AS N) QL=1				AG (SILVER) QL	=10	•			
NO32 (NITRATE/	NITRITE AS N) QL=0	1			AS (ARSENIC) D	L=10				
P (TOTAL P) QL	_=0 05				B (BORON) QL=10	00				
COD (CHEMICAL	OXYGEN DEMAND) QL=5				BA (BARIUM) QL	. = 200				
CL (CHLORIDE)	QL=1				CD (CADMIUM) QI	L=5				
TDS (TOTAL DIS	SSOLVED SOLIDS) QL≃1				CO (COBALT) QL	.=5 0				
FL (FLUORIDE)	QL=1				CR (CHROMIUM) (QL=10				
SO4 (SULFATE)	QL=1				CU (COPPER) QL:	=25				
CA (CALCIUM) Q	0L=5				FE (IRON) QL=1	00				
MG (MAGNESIUM)	QL=5				HG (MERCURY) QI	K=0 2				
NA (SODIUM) QL	. = 5				MN (MANGANESE)	QL=15				
HARD (HARDNESS	6) CALCULATED				PB (LEAD) QL=5	;				
TOC (TOTAL ORG	BANIC CARBON) GL=1				SE (SELENIUM)	QL=5				
					ZN (ZINC) QL=2	20				
					TOX (TOTAL ORG	BANIC HALOG	GEN) QL=5			
COND (CONDUCTI	(VITY) AT 25 C UMHO/	CM			ELEVATION OF R	REFERENCE F	POINT			
PH (UNITS)					WATER LEVEL (D	EPTH FROM	REFERENCE	POINT TO WATER) FT		
RECHARGES TOO WELL VOLUMES R	S WITHIN 24 HRS YES SLOWLY TO SAMPLE Y REMOVED TERS STABILIZED: YE	es no			TOTAL DEPTH OF	WELL (DIS	STANCE FROM	REFERENCE POINT TO	BOTTOM OF WELL)	FT
SAMPLE COLLECT	ED BY: BATLER PL	MP OTHER (CIR		SAMPLE (CIRCLE ON	E)	COLLECTED COLLECTOR METALS FI	IELD FILTER	FILL JAB (CIRCLI FILL JAB (CIRCLI FD: YES NO TH EACH SAMPLE: YES		

ANNUAL WABTE MANAGEMENT-WATER MONITORING REPORT

FACILITY: 8T FRANCOIS COUNTY SANITA PERMIT NO: 118701 POINT NO: 103 NOTES - QL MEANS THE REASONABLY ACCEPT UNITS FOR LOWER VALUES PLACE FILTER AT TIME SAMPLES ARE COLL	FABLE QUANTITATIVE LIMIT F E A LESS THAN BIGN (<) IN	WASTE MANAGEMENT-ENFORCEMENT SECTION P O BOX 176 \$ JEFFERSON CITY MO 65102 FOR EACH PARAMETER IN THE SPECIFIED FRONT OF VALUES	DATE RECD BY LAB: 5 11-89 SAMPLER_RECD PROPERLY PRESERVED (V N (CIRCLE ONE) BAMPLES ANALYZED W/IN HOLDING TIME: (V N (CIRCLE ONE) LAB NAME Larran Laboratory LAB ADDRESS 2 Broadway LAB TELEPHONE 314-334 8910 LAB SUPERVISOR S SIGNATURE
UNITS - MG/L		UNITS -	- UG/L
NH3 (AMMONIA AS N) QL=1	0.34	AG (SILVER) QL=10	420
NO32 (NITRATE/NITRITE AS N) QL=0 1	<u>5 83</u>	AS (ARSENIC) QL=10	18
P (TOTAL P) QL=0 05	412	B (BORON) QL=100	140
COD (CHEMICAL DXYGEN DEMAND) QL=5	<u> </u>	BA (BARIUM) QL=200	<u> </u>
CL (CHLORIDE) GL=1	2.1	CD (CADMIUM) 9L=5	
TDS (TOTAL DISSOLVED SOLIDS) QL=1	1309.5	CO (COBALT) QL=50	30
FL (FLUORIDE) QL=1	1.348	CR (CHROMIUM) QL=10	
SO4 (SULFATE) QL=1	3165	CU (COPPER) QL=25	
CA (CALCIUM) QL=5	285	FE (IRON) QL=100	76
MG (MAGNESIUM) QL=5	75	HG (MERCURY) QL=0 2	402
NA (SODIUM) QL=5	057	MN (MANGANESE) QL=15	140
HARD (HARDNESS) CALCULATED	1020.5	PB (LEAD) QL=5	
TOC (TOTAL ORGANIC CARBON) QL=1		SE (SELENIUM) QL=5	<5
		ZN (ZINC) QL=20	<u>46</u>
		TOX (TOTAL ORGANIC HA	LOGEN) QL=5
COND (CONDUCTIVITY) AT 25 C UMHO/CM	1432	ELEVATION OF REFERENCE	E POINT
PH (UNITS)	697	WATER LEVEL (DEPTH FR	OM REFERENCE POINT TO WATER) FT
WELL RECHARGES WITHIN 24 HRS: YES NO RECHARGES TOO SLOWLY TO SAMPLE: YES WELL VOLUMES REMOVED PURGING PARAMETERS STABILIZED: YES NO SAMPLE COLLECTED BY: MAILER PUMP TYPE OF SAMPLE: WELL HITHOUT PUMP WELL WITHOUT PUMP WELL WITHOU	OTHER (CIRCLE ONE)	SAMPLE (CIRCLE ONE) DATE COLLEC COLLEC COLLEC METALS	OLLECTED 5-11-87 TED BY LANDFILL (AR (CIRCLE ONE) TOR'S NAME 7 (AR) FIELD FILTERED: (ES) NO OF CUSTODY WITH EACH SAMPLE: (YES) NO

FACILITY ST FRANCOIS COUNTY SANITARY LANDPLEBSE FORWARD TO: DEPARTMENT OF NATURAL RESOURCES MASTE MANACEME T-ENFORCEMENT SECT O PERMIT NO 118701 SAMPLES ANALYZED W/IN HOLDING TIME ON (CIRCLE ONE) P 0 BOX 176 POINT NO: 106 JEFFERSON CITY MO 65102 LAB NAME Lacres Laboratory LAB ADDRESS 23 Broadway Lane Girardenu MO 63791 NOTES - QL MEANS THE REASONABLY ACCEPTABLE QUANTITATIVE LIMIT FOR EACH PARAMETER IN THE SPECIFIED UNITS FOR LOWER VALUES PLACE A LESS THAN SIGN (<) IN FRONT OF VALUES LAB TELEPHONE 3/4 334-89/0 FILTER AT TIME SAMPLES ARE COLLECTED FOR ALL HEAVY METALS MERCURY AND TDS LAB SUPERVISOR 5 SIGNATURE UNITS - UG/L UNITS - MG/L 0.06 420 AG (SILVER) QL=10 NH3 (AMMONIA AS N) QL=1 AS (ARSENIC) QL=10 NO32 (NITRATE/NITRITE AS N) QL=0 1 P (TOTAL P) QL=0 05 B (BORON) QL=100 37/ COD (CHEMICAL OXYGEN DEMAND) QL=5 BA (BARIUM) QL=200 CL (CHLORIDE) QL=1 CD (CADMIUM) QL=5 420 TDS (TOTAL DISSOLVED SOLIDS) QL=1 CO (COBALT) QL=50 420 FL (FLUORIDE) QL=1 CR (CHROMIUM) QL=10 Z20 CU (COPPER) QL=25 SO4 (SULFATE) QL=1 FE (IRON) QL=100 CA (CALCIUM) QL=5 HG (MERCURY) QL=0 2 MG (MAGNESIUM) QL=5 NA (SODIUM) QL=5 MN (MANGANESE) QL=15 HARD (HARDNESS) CALCULATED PB (LEAD) QL=5 SE (SELENIUM) QL=5 TOC (TOTAL ORGANIC CARBON) QL=1 710 ZN (ZINC) QL=20 TOX (TOTAL ORGANIC HALOGEN) QL=5 ELEVATION OF REFERENCE POINT COND (CONDUCTIVITY) AT 25 C UMHQ/CM HATER LEVEL (DEPTH FROM REFERENCE POINT TO WATER) FT PH (UNITS) TOTAL DEPTH OF WELL (DISTANCE FROM REFERENCE POINT TO BOTTOM OF WELL) FT (ω, \mathcal{S}) WELL RECHARGES WITHIN 24 HRS: YES NO RECHARGES TOO SLOWLY TO SAMPLE: YES NO HELL VOLUMES REMOVED_____ PURBING PARAMETERS STABILIZED: YES NO SAMPLE COLLECTED BY BATLER PUMP OTHER (CIRCLE ONE) DATE COLLECTED 5-11-89 TYPE OF SAMPLE (FILL WITHOUT PUMP) WELL WITH PUMP SURFACE SAMPLE (CIRCLE ONE) COLLECTED BY LANDFILL LED (CIRCLE ONE)
COLLECTOR S NAME Y COLLECTOR S NAME COLLECTOR & COMMENTS INSUFFCIENT

METALS FIELD FILTERED (ES) NO

CHAIN OF CUSTODY WITH EACH SAMPLE (YES NO